

THE GENUS *PRISTIRHYNCHOMYIA*,
BRUNETTI, 1910

BY

CAPTAIN W. S. PATTON, M.B., I.M.S.

AND

CAPTAIN F. W. CRAGG, M.D., I.M.S.

THE KING INSTITUTE OF PREVENTIVE MEDICINE, GUINDY, MADRAS

(Received for publication 20 November, 1911)

The genus *Pristirhynchomyia* was created by Brunetti to include a single species, *lineata* (Brunetti, 1910), which he separated from the genus *Philaematomyia*, Austen, on account of certain differences in the proboscis. The following is a portion of his original description of the genus:—

'With the exception of an important modification of the proboscis, identical with *Philaematomyia*, Aust., the general characters, the venation and chaetotaxy agreeing exactly.

'The two parts of the proboscis, however, are structurally reversed, the wide basal part being fleshy and flexible, the second part (of about equal length) being sub-cylindrical, black and distinctly chitinized, possibly retractile to the extent of its withdrawal partly or wholly within the fleshy basal portion. At the end of the chitinous portion is a soft fleshy tip, the terminal orifice being of the shape of a triangle with a rounded base (the edges being thickened somewhat by a rim bearing the teeth). At the apex of the triangle is a single black tooth, whilst arranged around the orifice above are three pairs of similar black teeth.

'Under high microscopic power the apparent "rim" of the orifice is seen to be the base of each tooth extended considerably on each side, so that the "rim" is not continuous.

'The new genus is intermediate between *Philaematomyia* and *Musca*, but the presence of the teeth suggests that it can hardly be other than a "biting fly."

We have examined several preparations of the mouth parts of this fly, including one made from a co-type, identified by Brunetti, for which we are indebted to Dr. Annandale, Superintendent of the Indian Museum, and have found that the description quoted above, and the figures which accompany it, are inaccurate and misleading, and that such deviations as there are from the type of *Philaematomyia* are differences in degree and not in kind. The proboscis is not 'structurally reversed' but consists of a proximal portion, the rostrum, containing the fulcrum, and a distal portion, the haustellum, which bears the oral lobes; that is to say, the proboscis is of the ordinary muscid type, and is as retractile as that of *Musca domestica*, Lin. There are five pairs of teeth (one pair of which is rudimentary), and not three as stated by Brunetti. The 'rim' is not formed by the bases of the teeth, but corresponds to the discal sclerite of non-blood-sucking muscids. It is obvious, from the terms used in the description, that the writer of it is not familiar with the structure of the proboscis of a typical *Musca*.

We infer from Brunetti's paper that the description was written after examination of pinned specimens and proboscides mounted in Canada balsam without special manipulation. Under such conditions it is extremely difficult, in fact impossible, to make out the finer details of the parts. To study the chitinous structures satisfactorily it is essential to clear the preparations in potash, and to mount in balsam in varying positions. In the case of this fly, one can, with a little care, dissect off the chitinous ring to which the teeth are attached, and mount it flat.

The proboscis of this fly closely resembles that of *Philaematomyia insignis*, Austen, which will shortly be described in detail by one of us (F.W.C.). All the structures found in the latter fly are represented in *lineata*, and it will only be necessary here to indicate the points of difference between the two. The proximal portion, or rostrum, is relatively somewhat larger than in *insignis*; the distal part, or haustellum is, contrary to what one would infer from the original description, considerably less densely chitinized, and therefore less rigid. The theca is shallower, and the thickening of its lateral margins not nearly so well marked. The middle portion of the membrane which stretches between the two

lateral borders of the theca is not chitinized into a definite 'labial gutter' such as one finds in *Philaematomyia insignis* and *Stomoxys*; in place of this there are two rod-like thickenings, between which the membrane is only slightly chitinized, the whole forming a trough to accommodate the labrum-epipharynx and hypopharynx.

The labellar rods, which are the lateral arms of the discal sclerite, are articulated, as in *insignis*, on the ends of the labial rods. The main portion of each is conical, the thickest part lying in front of the end of the labial rod, the sharp internal angles projecting inwards towards one another at the level of the tip of the labrum. The upper ends of the rods are pointed, and diverge widely from one another. The lower and outer angle of each of these wedge-shaped rods is produced downwards and inwards, and directly downwards at the tip, where it projects beyond the axial apophysis. This downward prolongation gives attachment to the inner ends of the teeth.

The *axial apophysis* is V-shaped, its pointed apex forming the apex of a triangle, from the sides of which the teeth appear to arise. It is situated, however, posterior to the downward prolongation of the labellar rods, and is not directly connected with the teeth. The proximal ends of its arms are attached to the labellar rods on their posterior surface.

The *teeth* resemble those of *insignis*, but are considerably more slender and pointed. They arise from the membrane between the pseudo-tracheae by expanded bases, the inner ends of which are elongated and attached to the downward prolongation of the labellar rods. The second, third and fourth teeth on each side are approximately equal in size. The fifth is smaller, but similar, while the first pair, which lie on either side of the tip of the axial apophysis, are about a quarter the size of the others, and project very little from the surface of the membrane. The 'serrated blades' of *Philaematomyia insignis* are represented by four pairs of spine-bearing chitinous strands. These arise from the membrane between the base of the teeth, a little away from the distal portion of the labellar rods. Each runs outwards parallel to the teeth, and bifurcates in U-shaped manner at the level of the most distal portion of the attachment of the teeth to the membrane. At the point of bifurcation the lateral arms split up into three or four filaments,

which lie to a certain extent super-imposed on one another, and are somewhat difficult to see.

The *Pseudo-tracheal membrane* presents no peculiarities, being identical with that of *insignis*, except that the channels are a little wider. The fourth to the seventh channels, counting from the front, terminate between the lateral arms of the spine-bearing strands, the filaments arising from the strand lying parallel to the horseshoe-shaped chitinous rings of the pseudo-tracheal channels.

From the foregoing it will be seen that this fly corresponds in all essential particulars to Austen's description of the genus *Philaematomyia*, and we are of opinion that it should be placed in that genus, since we think that it is unjustifiable to create new genera on minor details of structure which cannot be made out without dissection.

One of us (W.S.P.) has bred *Philaematomyia lineata* from the egg. Its breeding habits are identical with those of *insignis*, shortly to be described by us. From thirty to forty eggs are laid in cow dung, all in one place. The eggs are slightly smaller than those of *insignis*, but are otherwise similar. The larvae behave in the same way when about to pupate, and have the same lemon yellow colour. The puparium is similar but smaller.

Brunetti states that Dr. Annandale has frequently seen this fly distended with blood, while feeding on cattle. We have not ourselves observed this, although this fly is fairly common here during the colder months. The fact that it has been taken distended with blood is, of course, no proof that it can obtain blood independently; it may, like *Musca pattoni*, Austen, and *Musca convexifrons*, Thomson, suck up the blood which exudes from the wounds made by other biting flies.

The male fly, which Brunetti does not appear to have seen, is much like the female, but has a distinctly lighter abdomen. It will be described fully on another occasion.

NOTE

Since writing the above, one of us (W.S.P.) has found a new species of *Philaematomyia*, the habits of which are identical with those of *insignis*. It is distinguished by its large size (0.7-0.8 cm.

long) and its coloration. There are the usual four admedian dark stripes on the thorax, and a narrow median dark line on the dorsal surface of the abdomen; the lateral halves of each segment are a light olive green colour. The proboscis resembles that of *insignis*, but has five large teeth and two rudimentary ones on each side. We propose naming this fly *Philaematomyia gurnei*, sp. nov., after Mrs. Patton, who was one of the first to see it. A detailed description will be published later.

REFERENCES

- AUSTEN, E. E. (1909). New Genera and Species of bloodsucking Muscidae from the Ethiopian and Oriental Regions in the British Museum. *Ann. Mag. Nat. His.* 8, iii, p. 285.
- BRUNETTI, E. (1910). Revision of the Oriental bloodsucking Muscidae (*Stomoxinae*, *Philaematomyia*, Aust., and *Pristirhynchomyia*, gen. nov.) *Rec. Ind. Mus.* IV, 4, p. 59.
- CRAGG, F. W. (1911). The Structure of the Proboscis of *Philaematomyia insignis*, Austen. (Will be published in the 'Scientific Memoirs Series.')

EXPLANATION OF PLATE XXV

Fig. I.—The proboscis, seen in profile, drawn from a potash preparation.

- f.* Fulcrum.
- M.* Membraneous wall of the rostrum.
- sl.d.* Salivary duct (enclosed within the membrane).
- l.ap.* Labral apodeme.
- p.* Palp.
- l.ep.* Labrum-epipharynx.
- hy.* Hypopharynx.
- lb.r.* Labial rod.
- l.r.* Labellar rod.
- fu.* Furca.

Fig. II.—The teeth and connected structures, seen from the front, when extended. Drawn from a potash preparation.

- ax.p.* Axial apophysis.
- pt.* Pseudo-tracheal channel.
- s.* Spine-bearing chitinous strand, representing the serrated blades of *Philaematomyia insignis*.
- l.r.* Labellar rod.
- lb.r.* Labial rod.
- l.ep.* Labrum-epipharynx.
- t.* Teeth.

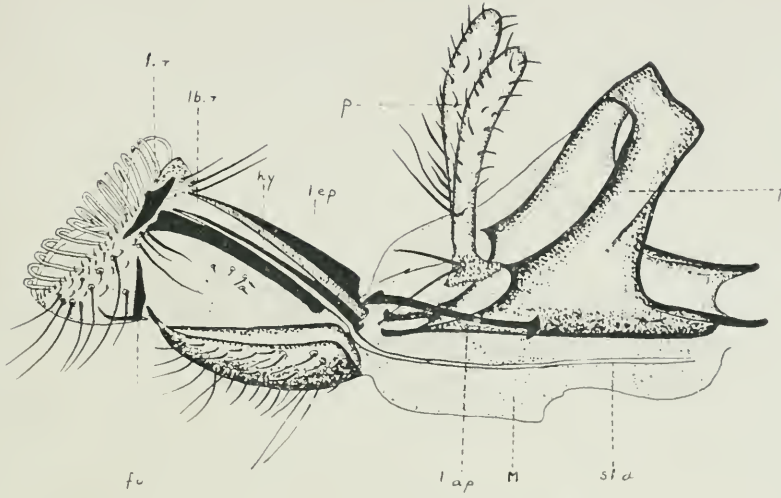


Fig. 1

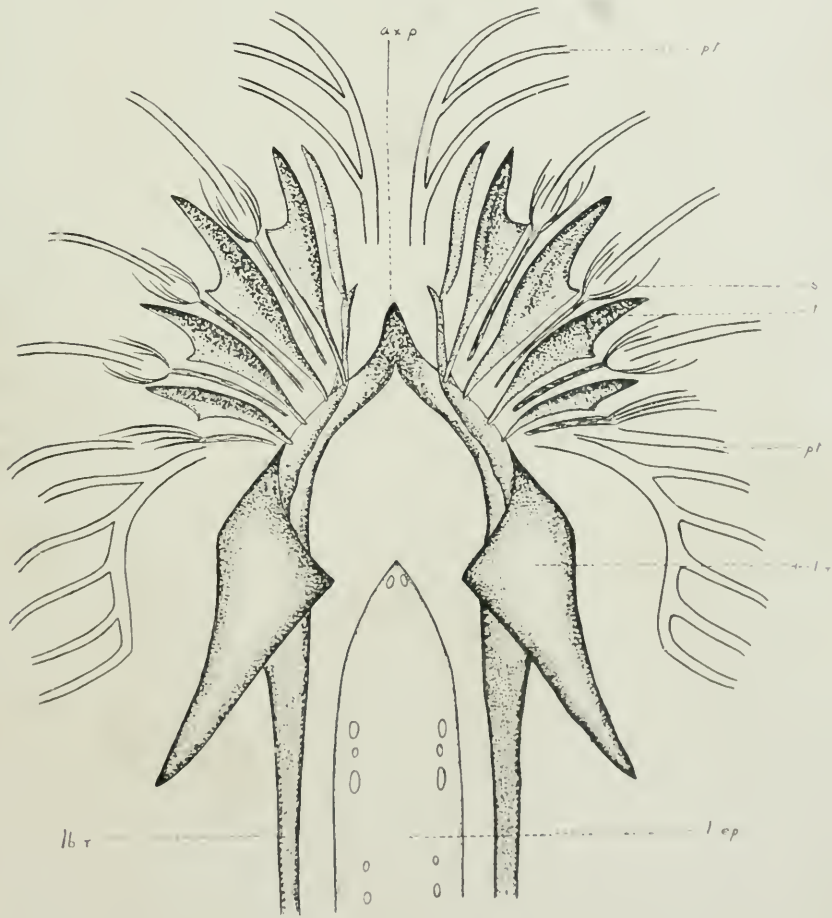


Fig. 2